

Does Transsacral-Transiliac Screw Fixation of an Uninjured Sacroiliac Joint Affect Pain and Functional Outcomes at 1-Year Follow-up?

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Purpose: Controversy exists regarding the effects of placement of a screw across an uninjured sacroiliac joint. Concerns including increased pain and decreased function have been suggested, while biomechanical benefits of transsacral-transiliac (TSTI) fixation have been documented when compared to iliosacral (IS) screws that stop short of the contralateral sacroiliac joint. Our null hypothesis is that placement of a TSTI screw across a contralateral uninjured sacroiliac joint in the first or second sacral segment will not show any difference with postoperative pain or patient-derived functional outcomes at 12 months follow-up.

Methods: All patients between ages 18-84 years who sustained injuries to the pelvic ring (AO/OTA 61 A, B, C) that were surgically treated between 2011 and 2013 at an academic Level I trauma center were identified for selection. Inclusion criteria were unilateral sacroiliac disruption or sacral fractures treated with standard IS screws and/or TSTI screws placed in the posterior ring. Exclusion criteria were bilateral posterior pelvic ring injuries, fixation with a device other than a screw, use of lumbopelvic fixation, previous pelvic or acetabular fractures, associated acetabular fractures, and ankylosing spondylitis. Outcomes were assessed at least 12 months after injury using the visual analog scale (VAS) pain scores for both posterior sacroiliac joints, Short Musculoskeletal Function Assessment (SMFA), and Majeed scores.

Results: 120 patients were identified that met inclusion and exclusion criteria. The study population was separated into two groups. Patients in group 1 were treated with TSTI screw fixation (n = 57) in the first and/or second sacral segments. Patients in group 2 were treated with IS screw fixation (n = 83) in the first and/or second sacral segments. Multiple attempts were made to contact every patient and 53 were available for follow-up at 12 months with 22 in group 1 and 31 in group 2 completing all outcome measures. There were no statistically significant differences between the groups with regard to age, gender, and ISS (all P values >0.33). No statistically significant differences were seen in VAS pain scores in the injured or uninjured sacroiliac joints, Majeed score, or SMFA function and bother indices between groups 1 and 2 (Table 1).

Conclusion: There were no statistically significant differences in VAS pain, SMFA bother and function indices, or Majeed scores between patients treated with TSTI or IS screw fixation for unilateral sacroiliac joint disruptions or sacral fractures. Placement of fixation across a contralateral, uninjured sacroiliac joint appear to have no significant clinical effect at 1 year post instrumentation.

Table 1. Patient derived outcome measures after screw fixation of the posterior pelvic ring

	VAS Injured	VAS Uninjured	Majeed	SMFA Function	SMFA Bother
Group1 TSTI Means (n-22)	2.95	2	79.3	29.7	29.7
Group 2 IS Means (n-31)	2.87	1.84	80.3	22.8	24.3
<i>p</i> values	0.91	0.82	0.92	0.286	0.415